CLAIMS:

1 An amplifier comprising a first long tail pair of transistors, a second long tail pair of transistors, and a current source for setting tail currents of the first and second long tail pairs in a predetermined ratio, the current source comprising: a supply input; a first resistance; a second resistance; at least one first bipolar transistor having a collector forming a first current source output, a base connected to a bias voltage source, and an emitter connected via said first resistance to said supply input; and a second bipolar transistor having a collector forming a second current source output, a base connected to said bias voltage source, and an emitter connected via said second resistance to said emitter of said first transistor.

2 An amplifier as claimed in claim 1, in which said at least one first transistor comprises a plurality of parallel-connected transistors.

3 An amplifier as claimed in claim 1, in which said second resistance has a value substantially equal to:

$$\frac{Vt.\lambda}{I}\ln\left(\frac{\lambda}{n}\right)$$

where ln is a natural logarithm, I is an output current of said first current source output, Vt is a thermal voltage, λ is said predetermined ratio, and n is a number of transistors forming said first transistor.

4 An amplifier as claimed in claim 1, comprising cross-connected first and second differential pairs of transistors, said first and second long tail pairs having outputs connected to said cross-connected first and second differential pairs of transistors.

5 An amplifier as claimed in claim 1, having first and second inputs and third and fourth resistances, said first long tail pair comprising third and fourth transistors having input terminals connected to said first and second inputs, respectively, and common

terminals connected via said third and fourth resistances, respectively, to said first current source output.

6 An amplifier as claimed in claim 5, in which said third and fourth transistors are bipolar transistors, said second amplifier input is connected at signal frequencies to a common line, and a value of said third resistance is substantially equal to a value of said fourth resistance plus (Zs/β_1), where Zs is a source impedance to which said first amplifier input is to be connected and β_1 is a current gain of said third transistor.

7 An amplifier as claimed in claim 6, comprising fifth and sixth resistances, said third and fourth transistors having output terminals and said second long tail pair comprising fifth and sixth transistors having input terminals connected to said first and second inputs, respectively, common terminals connected via said fifth and sixth resistances, respectively, to said second current source output, and output terminals connected to said output terminals of said fourth and third transistors, respectively.

8 An amplifier as claimed in claim 7, in which said fifth and sixth transistors are bipolar transistors and a value of said fifth resistance is substantially equal to a value of said sixth resistance plus (Zs/β_2), where β_2 is a current gain of said fifth transistor.

9 An amplifier comprising: a first current source; a first resistance; a first bipolar transistor having a collector, a base for connection to a signal source having a source impedance Zs and an emitter connected via said first resistance to said first current source; a second resistance; and a second bipolar transistor having a collector, a base connected at signal frequencies to a common line and an emitter connected via said second resistance to said first current source, a value of said first resistance being substantially equal to a value of said second resistance plus (Zs/β_1), where β_1 is a current gain of said first transistor.

10 An amplifier as claimed in claim 9, comprising: a second current source; a third resistance; a third bipolar transistor having a base connected to said base of said first transistor, an emitter connected via said third resistance to said second current source, and a collector connected to said collector of said second transistor; a fourth resistance; and a fourth bipolar transistor having a base connected to said base of said second transistor, an emitter connected via said fourth resistance to said second current source, and a collector connected to said collector of said first transistor, a value of said third resistance being substantially equal to a value of said fourth resistance plus (Zs/β_2), where β_2 is a current gain of said third transistor.

11 An amplifier as claimed in claim 10, comprising a capacitor connecting said base of said second transistor to said common line.

12 A radio tuner including an amplifier comprising a first long tail pair of transistors, a second long tail pair of transistors, and a current source for setting tail currents of the first and second long tail pairs in a predetermined ratio, the current source comprising: a supply input; a first resistance; a second resistance; at least one first bipolar transistor having a collector forming a first current source output, a base connected to a bias voltage source, and an emitter connected via said first resistance to said supply input; and a second bipolar transistor having a collector forming a second current source output, a base connected to said bias voltage source, and an emitter connected via said second resistance to said emitter of said first transistor.

13. A radio tuner including an amplifier comprising: a first current source; a first resistance; a first bipolar transistor having a collector, a base for connection to a signal source having a source impedance Zs and an emitter connected via said first resistance to said first current source; a second resistance; and a second bipolar transistor having a collector, a base connected at signal frequencies to a common line and an emitter connected via said second resistance to said first current source, a value of said first resistance being substantially equal to a value of said second resistance plus (Zs/β_1), where β_1 is a current gain of said first transistor.